

WHAT IS CLAIMED IS:

1. A material which comprises:

a zeolite; and,

a porous inorganic oxide which includes at least
97 volume percent mesopores based on micropores and
mesopores of the inorganic oxide.

2. The material of claim 1 wherein the zeolite is a
microporous zeolite.

3. The material of claim 2 wherein the microporous
zeolite is selected from the group consisting of zeolite
beta, zeolite Y and ZSM-5.

4. The material of claim 1 wherein the porous inorganic
oxide contains at least 98 volume percent mesopores.

5. The material of claim 1 wherein the mesopores have a
size ranging from about 2 nm to about 25 nm.

6. The material of claim 1 wherein the porous inorganic
oxide is silicon oxide.

7. The material of claim 1 wherein the porous inorganic oxide is aluminum oxide.

8. The material of claim 1 including metal atoms selected from the group consisting of aluminum, titanium, vanadium, zirconium, gallium, manganese, zinc, chromium, molybdenum, nickel, cobalt and iron.

9. The material of claim 1 wherein the composition percentage by weight of the zeolite ranges from about 5% to about 90%.

10. The material of claim 1 wherein the composition percentage by weight of the zeolite ranges from about 20% to about 80%.

11. A method for making a catalytic material which comprises the steps of:

a) combining a zeolite with water, an inorganic oxide or a precursor of an inorganic oxide, and at least one mesopore forming organic compound that binds to the inorganic oxide or the precursor of the inorganic oxide by hydrogen bonding to form a mixture;

b) drying the mixture;

c) heating the dried mixture to a temperature and for a period of time sufficient to form a mesoporous oxide structure.

5 12. The method of claim 11 wherein said mesopore forming organic compound is selected from the group consisting of glycerol, diethylene glycol, triethylene glycol, tetraethylene glycol, propylene glycol, triethanolamine, sulfolane, tetraethylene pentamine and diethylene glycol dibenzoate.

10 13. The method of claim 11 wherein said mesopore forming organic compound has a boiling point of at least about 150°C.

15 14. The method of claim 11 wherein the inorganic oxide is formed by reacting an inorganic oxide precursor with the water.

20 15. The method of claim 14 wherein the inorganic oxide precursor is selected from the group consisting of tetraethyl orthosilicate and aluminum isopropoxide.

16. The method of claim 11 wherein the mixture is maintained at a pH above about 7.0.

17. The method of claim 11 wherein the compound is added to the mixture by dropwise addition with stirring and wherein the mixture forms a gel.

18. The method of claim 11 wherein the mixture includes an alkanol.

19. The method of claim 11 wherein the mixture is dried by heating in air at a temperature and for a period of time sufficient to drive off water and volatile organic compounds.

20. The method of claim 11 wherein the heating step (c) comprises heating the dried mixture to a temperature of from about 100°C to about 250°C.

21. The method of claim 11 wherein the heating step (c) comprises heating the dried material to a temperature of from about 150°C to about 200°C.

22. The method of claim 11 further comprising the step of calcining the heated dried mixture at a temperature of from about 300°C to about 1000°C.

5 23. The method of claim 11 further including the step of calcining the heated dried mixture at a temperature of from about 400°C to about 700°C for about 2 hours to about 40 hours.

10 24. The method of claim 11 further comprising combining metal ions with the mixture, the metal being selected from the group consisting of titanium, vanadium, zirconium, gallium, manganese, zinc, nickel, iron, cobalt, chromium and molybdenum.

10/22/75 0995227.5 212701 25. The method of claim 11 further comprising the steps of admixing a binder with the catalytic material and forming the catalytic material into a predetermined shape.

20 26. A process for treating a hydrocarbon feed comprising:

contacting a feed containing at least one hydrocarbon component with a catalytically effective amount of a catalyst which includes a zeolite supported on a porous

inorganic oxide having at least 97 volume percent mesopores based on micropores and mesopores of the porous inorganic oxide under reaction conditions sufficient to effect conversion of said hydrocarbon component.

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27. The process of claim 26 wherein the conversion of the hydrocarbon component is effected by means of a hydrocracking reaction hydroisomerization reaction, dewaxing reaction, or alkylation reaction.

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28. The process of claim 26 wherein said feed includes an aromatic compound and an olefin and the reaction conditions are sufficient to effect alkylation of the aromatic compound with the olefin.

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29. The process of claim 28 wherein the reaction conditions include a temperature of from about 90°C to about 250°, a pressure of from about 10 psig to about 500 psig, and a space velocity of from about 1 WHSV to about 20 WHSV.

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30. The process of claim 26 wherein the zeolite is a microporous zeolite.

31. The process of claim 30 wherein the microporous zeolite is zeolite beta.

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